

In the Drawings:

Figure 1 is amended as shown in the attached Replacement Sheet, by deleting reference designators "V," "P," "R," and 13a, and by changing reference designators 14a, 16a, and 18a to 114a, 116a, and 118a, respectively.

## **REMARKS**

The foregoing Amendment and these Remarks are in response to the final Office Action dated March 22, 2006. Accordingly, this submission is accompanied by a request for a three-month extension of time, together with the required fee.

### **Drawings**

In the Office Action the Examiner has objected to the drawings on the basis that they include reference characters not mentioned in the description, namely, in Figure 1, items V, 13a, 14a, 16a, and 18a. There is also an objection relating to Figure 9, though it is not explained.

Element 13a is eliminated from Figure 1, and 14a, 16a, and 18a are changed to 114a, 116a, and 118a in accord with the description. The designation "V" ("vertical") is also eliminated (though the specification describes a height-tilt/tip adjustment mechanism 30). Also, although they are not mentioned, the designators "P" and "R" are also eliminated for having no explicit description in the specification.

Possibly the objection to Figure 9 is that the Examiner finds reference designators in the Figure that are not mentioned in the description, and possibly this is because the text in which the reference designators are used refers erroneously to Figure 7 instead of Figure 9. So the specification is corrected in this regard. If this is not the issue spotted by the Examiner and there are indeed objections to Figure 9, the Examiner is respectfully requested to explain them.

### **Objection to Specification**

Applicants thank the Examiner for his attention in noting the error in the paragraph on page 11, which has been corrected.

### **Claim Rejections--35 U.S.C. §112**

Claims 3, 26, 33, 40, 43, 46, 49 and 52 stand rejected under Section 112, second paragraph, because the claims, which are method claims, include steps of providing hardware.

Claims 3 and 26 have been amended to correct an error in those claims, in that the word "providing" was missing. However, the claims have not been further amended. MPEP §2173 lists the grounds for rejecting claims for indefiniteness, and Applicants can find no indication that reciting a step of providing hardware is considered by the Office to render a method claim indefinite. So if the rejections are maintained, the Examiner is respectfully requested to cite authority in support.

#### Claim Rejections--35 U.S.C. §101

Claims 1 - 53 were rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter in that no physical transformation is being claimed, with no useful, concrete, or tangible result.

Applicants respectfully traverse the rejections. MPEP §2106(i), describes two so-called "safe harbors" wherein computer related inventions are statutory. While it is not required that all the claimed methods be carried out on a computer, it is believed that the analysis provided in MPEP §2106 is nevertheless appropriate to resolve the issue the Examiner raises.

One of the safe harbors provided in MPEP §2106(i) is described as "MANIPULATION OF DATA REPRESENTING PHYSICAL OBJECTS OR ACTIVITIES (PRE-COMPUTER PROCESS ACTIVITY)." Under this provision, a method is statutory if it manipulates or processes data that represents physical objects, provided of course that the method is useful (i.e., it has "real world value"--the invention here has at least the real world value described in the specification).

All of the claims also manipulate data representing physical objects, by processing image data. The term "image" means "a reproduction or imitation of the form of a person or thing" (Webster's Ninth New Collegiate Dictionary, 1991, page 600--copy enclosed). Since persons and things are real physical objects, the claims are statutory subject matter under MPEP §2106(i).

Claim Rejections -- 35 U.S.C §102(e)

Claim 50 was rejected under 35 U.S.C. §102(e) as being anticipated by Galperin, U.S. Patent No. 6,941,323 ("Galperin"). It is stated that Galperin discloses parametrically characterizing image data to obtain a characterizing vector, and searching for the image data by comparing the characterizing vector with a predetermined query vector.

Responsive to the rejections, claim 50 has been amended to recite the use of N-gram encoding in the specific context of pathology analysis. These distinctions render the allegation of anticipation moot, and are important for the reasons explained below.

Galperin pertains to searching for a defined object (Col. 3, lines 32 - 34), and starts with a structure or object that has already been identified as being of interest (Col. 3, lines 63 - 64). The purpose is to pre-characterize objects for later retrieval by searching.

Each defined object is then numerically characterized by a set of parameters. Col. 4, lines 41 - 42; col. 7, lines 9 - 10. The parameter set may include a computation of the area of the object, the perimeter of the object, the maximum and minimum diameters of the object through the center of gravity of the object, and other shape and size related parameters. Col. 7, line 14 - Col. 8, line 11. Other parameters related to pixel intensities are also taught, such as optical density and integrated density. Col. 7, lines 33 - 61. The texture of the object may be parameterized as well. Col. 9, lines 3 - 21. In all cases, an object must be defined and features particularized to that object are parametrically characterized.

In the invention of claim 50 as amended, a particular parametric characterization methodology, namely N-gram encoding, is utilized for parametrically characterizing particular image data, namely, pathology image data. As stated in the specification, N-gram encoding was known to be particularly useful in this context. Page 17, lines 3 - 4.

In N-gram encoding, a region is identified and the pixels in the region are encoded; for example, a 64 X 64 pixel square may be encoded as a region. See Page 17, lines 4 - 15. This region is an artifice--it does not define any particular object or structure seen in the image.

N-gram methodology was known to be highly sensitive to indications of disease. However, the concept of searching image data for general indications of disease, as

opposed to searching for particular, pre-identified objects or structures as in Galperin, was not recognized. So there was no motivation to use N-gram encoding specifically as a parametric characterization technique in Galperin.

#### Claim Rejections -- 35 U.S.C §103(a)

Claims 1 - 3, 5 - 6, 11, 17, 24 - 26, 31 - 33, and 53 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pub. 2003/0048310 ("Hart") in view of Hsu et al., U.S. Patent No. 7,010,742 ("Hsu").

Hart links an image of a street with more detailed images of, e.g., the fronts and interiors of stores on the street. Detailed images of, or corresponding to, individual stores on the street can be selected, apparently, by clicking on the street image. No searching of the stores or the detailed images is taught or suggested.

As the Examiner points out in connection with the rejection of claim 31, at Col.5, lines 30 - 34, Hsu discloses listing along with destinations corresponding to the links and by inspection of the list providing for selecting a destination of interest (see the discussion below in connection with the rejections of Claims 31-33). Hsu does not teach or suggest any other form of "searching."

Claim 1 has been amended to more precisely define the claimed subject matter (claim 53 is now dependent from claim 1) and adds a requirement for searching in addition to the claimed link creation. The searching is recited as being at least one of (a) examining a plurality of links to and from a portion of linked image data, (b) determining navigation sequences that include a link created between the image data, and (c) parametrically characterizing a portion of linked image data to obtain a characterizing vector and comparing the characterizing vector with a query vector. It should be noted that there is no intention to imply an order in the link creation and the searching by the order of recitation of the elements in the claim.

There is no motivation in Hart or Hsu to perform any of the above forms of searching.

Applicants respectfully traverse the rejections of claims 31 - 33. Independent claim 31 recites searching image data by examining links. It is argued that Hsu discloses

searching by examining links, with reference to Col. 5, lines 30 - 34, where the Examiner states that the links are displayed. The cited text is as follows:

"In order to integrate the various types of link information . . . a link browser is needed which displays the list of multiple links for a source object and provides the preview capability to avoid accessing unwanted documents . . . ."

A document browser 40 interacts with a link browser 36 in two ways. The document browser can invoke the link browser, when an anchor with link information is activated by the user (Col. 6, lines 65 - 67), by extracting link information from the documents and passing the information to the link browser. On the other hand, the document browser can be invoked by the link browser. In this case the link browser extracts information from the link and passes it to the document browser and the document browser performs application-specific functions, such as scrolling to a specific paragraph and highlighting a specific word in the destination document. Col. 7, lines 16 - 27.

The system apparently provides for listing all the links pointing out from a particular source, i.e., a number of links having the same source but different destinations. This allows the user to examine the links before deciding which destination to choose. The link browser also apparently allows for using the document browser as a viewer for viewing the source of a particular link.

Claim 31 has been amended to more precisely define the claimed invention. In addition to the fact that Hart and Hsu both pertain to links between multi-media documents, claim 31 as amended further distinguishes over Hart and Hsu because it requires examining links both to and from the claimed data objects.

Claims 38 - 49 were rejected under 35 U.S.C. §103(a) as being unpatentable over the combination Hart and Hsu further in view of Yang et al., "Mining Web-Logs for Prediction Models in WWW Caching and Prefetching" ("Yang"). The subject matter of Hart and Hsu has been briefly described above. Yang discloses caching or pre-fetching data based on frequent navigation sequences.

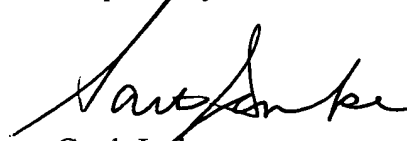
Claim 41 is clearly not taught or suggested by Hart/Hsu/Yang. Claim 41 expressly requires creating an electronic link as a result of determining a frequent navigation sequence, and there is no suggestion in any of these references to do that.

Claim 38 has been amended to more precisely define the claimed invention. While both Yang and claim 38 involve recognizing frequent navigation sequences, Yang does so in the context of searching data that is scattered across the Internet. There is no suggestion in Yang to apply that concept to searching for data within a single image record, i.e., image data related to a single image, such as a pathology slide or a tissue microarray.

In view of the foregoing Amendments and Remarks, it is submitted that the claims patentably distinguish over the prior art originally of record. Therefore, the Examiner is requested to enter the amendments, reconsider the rejections, and pass this case to issue.

In the event the Examiner has any further concerns, Applicant invites the Examiner to place a telephone call to the undersigned attorney for Applicant.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Garth Janke", written over a horizontal line.

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: ELUCIDATE (~s the theme of her poem) 3: to make illustrious or resplendent 4: to decorate (as a manuscript) with gold or silver or brilliant colors or with often elaborate designs or miniature pictures — *il-lu-mi-nat-ing-ly* \-nāt-ī-ŋ-lē/ *adv* — *il-lu-mi-na-tor* \-nāt-ər/ *n*  
*il-lu-mi-nate* \-nāt/ *n*, *archaic* (1600): one having or claiming unusual enlightenment

*il-lu-mi-na-ti* \il-ü-mā-nāt-ē/ *n* pl [It & NL; It, fr. NL; fr. L. pl. of *illuminatus*] (1599) 1 *cap*: any of various groups claiming special religious enlightenment 2: persons who are or who claim to be unusually enlightened

*il-lu-mi-na-tion* \il-ü-mā-nā-shən/ *n* (14c) 1: the action of illuminating or state of being illuminated: as a: spiritual or intellectual enlightenment b (1): a lighting up (2): decorative lighting or lighting effects c: decoration by the art of illuminating 2: the luminous flux per unit area on an intercepting surface at any given point 3: one of the decorative features used in the art of illuminating or in decorative lighting

*il-lu-mi-na-tive* \il-ü-mā-nāt-iv/ *adj* (1644): of, relating to, or producing illumination: ILLUMINATING

*il-lu-mine* \il-ü-mān/ *v* -mined; -min-ing (14c): ILLUMINATE — *il-lu-min-able* \-mā-nā-bəl/ *adj*

*il-lu-mi-nism* \-mā-niz-əm/ *n* (1798) 1: belief in or claim to a personal enlightenment not accessible to mankind in general, 2 *cap*: beliefs or claims viewed as forming doctrine or principles of Illuminati — *il-lu-mi-nist* \-nāst/ *n*

*il-lu-sage* \il-yü-sij-, -zij/ *n* (1621): harsh, unkind, or abusive treatment

*il-lu-se* \-yüz/ *v* (1841): to use badly: MALTREAT, ABUSE

*il-lu-sion* \il-ü-zhən/ *n* [ME, fr. MF, fr. LL *illusion*, -*illusio*, fr. L. action of mocking, fr. *illusio*, pp. of *illudere* to mock at, fr. *in-* + *ludere* to play, mock — more at LUDICROUS] (14c) 1 *a* *obs*: the action of deceiving b (1): the state or fact of being intellectually deceived, or misled: MISAPPREHENSION (2): an instance of such deception 2 *a* (1): a misleading image presented to the vision (2): something that deceives or misleads intellectually b (1): perception of something objectively existing in such a way as to cause misinterpretation of its actual nature (2): ILLUCINATION 1 (3): a pattern capable of reversible perspective 3: a fine plain transparent bobbinet or tulle usu. made of silk and used for veils, trimmings, and dresses — *il-lu-sion-al* \-üzh-nəl-, -ən-/ *adj*

*il-lu-sion-ary* \il-ü-zhə-ner-/ *adj* (1885): ILLUSORY  
*il-lu-sion-ism* \il-ü-zhə-niz-əm/ *n* (1911): the use of artistic techniques (as perspective or shading) to create the illusion of reality esp. in a work of art

*il-lu-sion-ist* \il-üzh-(ə-)nəst/ *n* (1850): one that produces illusory effects: as a: one (as an artist) whose work is marked by illusionism b: a sleight-of-hand performer or a magician — *il-lu-sion-is-tic* \-üzhə-nis-tik/ *adj* — *il-lu-sion-is-ti-cal-ly* \-ti-k(ə-)lə/ *adv*

*il-lu-sive* \il-ü-siv-, -ü-ziv/ *adj* (1679): ILLUSORY — *il-lu-sive-ly* *adv* — *il-lu-sive-ness* *n*

*il-lu-sory* \il-üs-(ə-)rē-, -üz-/ *adj* (1631): based on or producing illusion: DECEPTIVE (~ hopes) *syn* see APPARENT — *il-lu-sor-ily* \-(ə-)rē-lē/ *adv* — *il-lu-sor-i-ness* \-(ə-)rē-nəs/ *n*

*il-lu-strate* \il-əs-, trāt-, il-əs-/ *vb* -trated; -trating [L *illustratus*, pp. of *illustrare*, fr. *in-* + *lustrare* to purify, make bright — more at LUSTER] *vt* (1526) 1 *obs* a: ENLIGHTEN b: to light up 2 *a* *archaic*: to make illustrious b *obs* (1): to make bright (2): ADORN 3 a: to make clear: CLARIFY b: to make clear by giving or by serving as an example or instance c: to provide with visual features intended to explain or decorate (~ a book) 4: to show clearly: DEMONSTRATE ~ *vi*: to give an example or instance — *il-lu-strat-er* \il-əs-, trāt-ər, il-əs-/ *n*

*il-lu-stration* \il-əs-trā-shən, il-əs-/ *n* (14c) 1 *a*: the action of illustrating: the condition of being illustrated b *archaic*: the action of making illustrious or honored or distinguished 2: something that serves to illustrate: as a: an example or instance that helps make something clear b: a picture or diagram that helps make something clear or attractive *syn* see INSTANCE — *il-lu-stration-al* \-shnəl-, -shən-/ *adj*

*il-lu-strative* \il-əs-trat-iv/ *adj* (1643): serving, tending, or designed to illustrate (~ examples) — *il-lu-strat-ive-ly* *adv*

*il-lu-strious* \il-əs-trē-əs/ *adj* [L *illustris*, prob. back-formation fr. *illustrare*] (15c) 1: notably or brilliantly outstanding because of dignity or achievements or actions: EMINENT 2 *archaic* a: shining brightly with light b: clearly evident *syn* see FAMOUS — *il-lu-striously* *adv* — *il-lu-strious-ness* *n*

*il-lu-vial* \il-ü-vē-əl/ *adj* (1924): of, relating to, or marked by illuviation or illuviated materials or areas

*il-lu-viation* \il-ü-vē-ā-shən/ *n* [*in-* + *luviatio* (as in *eluviation*)] (1928): accumulation of dissolved or suspended soil materials in one area or horizon as a result of eluviation from another — *il-lu-vi-at-ed* \il-ü-vē-āt-əd/ *adj*

*ill* *n* (14c): unfriendly feeling *syn* see MALICE  
*il-lu-sher* \il-wish-ər-, -wish-/ *n* (1607): one that wishes ill to another  
*il-ly* \il-(l)ē/ *adv* (15c): not wisely or well: BADLY, ILL (his ~ concealed pride — Della Lutes)

*Illyr-i-an* \il-ir-ē-ən/ *n* (1584) 1: a native or inhabitant of ancient Illyria 2: the poorly attested Indo-European languages of the Illyrians — see INDO-EUROPEAN LANGUAGES table — *Illyrian* *adj*

*il-men-ite* \il-mā-nīt/ *n* [G *Ilmenit*, fr. *Ilmen* range, Ural Mts., U.S.S.R.] (1827): a usu. massive iron-black mineral FeTiO<sub>3</sub> composed of iron, titanium, and oxygen

*Ilo-ca-no* or *Ilo-ka-no* \ē-lə-kān-(ə)j-, il-/ *n* pl *Ilocano* or *Ilocanos* or *Ilokano* or *Ilokanos* (1840) 1 *a*: a major people of northern Luzon in the Philippines b: a member of this people 2: the Austronesian language of the Ilocano people

*im-* — see IN-

*im* \im/ *n* I am

*im-age* \im-ij/ *n* [ME, fr. OF, short for *imagine*, fr. L *imagin-*, *imago*; akin to L *imitari* to imitate] (13c) 1: a reproduction or imitation of the form of a person or thing; esp: an imitation in solid form: STATUE 2 *a*: the optical counterpart of an object produced by an optical device (as a lens or mirror) or an electronic device b: a likeness of an object produced on a photographic material 3 *a*: exact likeness: SEMBLANCE (God created man in his own ~ — Gen 1:27 (RSV)) b

a: a person strikingly like another person (he is the ~ of his father)  
 a: a tangible or visible representation: INCARNATION (the ~ of devotion) b *archaic*: an illusory form: APPARITION 5: a mental picture of something not actually present: IMPRESSION 6: mental conception held in common by members of a group: symbol of a basic attitude and orientation (a disorderly courtroom seriously tarnish a community's ~ of justice — Herbert Brown)  
 : IDEA, CONCEPT 6: a vivid or graphic representation: or description  
 : FIGURE OF SPEECH 8: a popular conception (as of a person, nation, or nation) projected esp. through the mass media (promote ~ of brotherly love and concern — R. C. Buck) 9: values given by a mathematical function (as a homomorphism) corresponds to a particular subset of the domain

*im-age* *vb* im-aged; im-aging *vi* (14c) 1: to call up a mental picture  
 : IMAGINE 2: to describe or portray in language esp: in a vivid way

3 *a*: to create a representation of; also: to form an image of or represent symbolically 4 *a*: REFLECT, MIRROR b: to make

: PROJECT ~ *vi*: to form an image — *im-ager* \-ər/ *n*

*im-age orthon* *n* (1945): a highly sensitive television image tube uses secondary emission and electron multiplication to produce output signal

*im-ag-ery* \im-ij-(ə-)rē/ *n*, pl. -eries (14c) 1: the product of makers: IMAGES; also: the art of making images 2: figurative language 3: mental images; esp: the products of imagination

*im-age tube* *n* (1936): an electron tube in which incident electronic radiation (as light or infrared) produces a visible image on a fluorescent screen duplicating the original pattern of radiation called also *image converter*

*im-ag-in-able* \im-aj-(ə-)nā-bəl/ *adj* (14c): capable of being imagined: CONCEIVABLE — *im-ag-in-able-ness* *n* — *im-ag-in-ably* \-bəl/ *adv*

*im-ag-i-nal* \im-aj-ən-/ *adj* [*imagine* + -*al*] (1647): of or relating to imagination, images, or imagery

*im-ag-i-nal* \im-ā-gən-/ *adj* [NL *imagin-*, *imago*] (18c) or relating to the insect imago

*im-ag-i-nary* \im-aj-(ə-)ner-/ *adj* (14c) 1 *a*: existing only in imagination: lacking factual reality: b: formed or characterized imaginatively or arbitrarily (his canvases, chiefly ~, somber landscapes — Current Biog.) 2: containing or relating to the imaginary (the roots) — *im-ag-i-nar-ily* \im-aj-(ə-)ner-ē-/ *adv* — *im-ag-i-nar-i-ness* \-ner-ē-nəs/ *n*

*syn* IMAGINARY, FANCIFUL, VISIONARY, FANTASTIC, CHIMERICAL, QUIMMER, unreal or unbelievable. IMAGINARY applies to something unreal, fictitious and purely the product of one's imagination; FANCIFUL suggests the free play of the imagination; VISIONARY stresses imaginativeness or incapability of realization; FANTASTIC implies incredible strangeness beyond belief; CHIMERICAL combines the implications of VISIONARY and FANTASTIC; QUIMOTIC implies a devotion to romantic, chivalrous ideals unrestrained by ordinary prudence and common sense.

*imaginary number* *n* (ca. 1609): a complex number (as  $2 + 3i$ ) in which the coefficient of the imaginary unit is not zero — called also *imaginary part* *n* (ca. 1929): the part of a complex number (as  $2 + 3i$ ) that has the imaginary unit as a factor

*imaginary unit* *n* (ca. 1609): the positive square root of minus one, denoted by  $i$  or  $\sqrt{-1}$

*im-ag-i-na-tion* \im-aj-(ə-)nā-shən/ *n* [ME, fr. MF, fr. L *imaginatio*, fr. *imaginatus*, pp. of *imaginari*] (14c) 1: the action of forming a mental image of something not present to the senses never before wholly perceived in reality 2 *a*: creative ability: ability to confront and deal with a problem: RESOURCEFULNESS: the thinking or active mind: INTEREST (stories that fired the ~ a: a creation of the mind; esp: an idealized or poetic creation: fanciful or empty assumption

*im-ag-i-na-tive* \im-aj-(ə-)nāt-iv-, -aj-(ə-)nāt-/ *adj* (14c) 1 *a*: of, relating to, or characterized by imagination: b: devoid of truth: FANCY: given to imagining: having a lively imagination 3: of or relating to images; esp: showing a command of imagery — *im-ag-i-na-tive-ly* *adv* — *im-ag-i-na-tive-ness* *n*

*im-ag-i-ne* \im-aj-ən-/ *vb* im-imagined; im-ag-in-ing \-aj-(ə-)nɪŋ/ [ME *imagine*, fr. MF *imaginer*, fr. L *imaginari*, fr. *imago*, *imago* *imago*] (14c) 1: to form a mental image of (something not present) *a* *chaic*: PLAN, SCHEME 3: SUPPOSE, GUESS (I ~ it will rain) 4: to form a notion of without sufficient basis: FANCY (~s himself to be the former of the world) ~ *vi* 1: to use the imagination 2: to BELIEVE *syn* see THINK

*im-ag-ism* \im-ij-iz-əm/ *n*, often *cap* (1912): a 20th century movement in poetry advocating free verse and the expression of ideas and emotions through clear precise images — *im-ag-ist* \-ij-əst/ *n* — *im-ag-ist-ic* \im-ij-ist-ik/ *adj* — *im-ag-ist-i-cal-ly* \-ti-k(ə-)lə/ *adv*

*im-a-go* \im-ā-(ə-)gō-, -ag-(ə-)jō/ *n*, pl. *imagoes* or *im-a-gi-nēs* \-ā-gē-/ [NL, fr. L. *imago*] (ca. 1797) 1: an insect in its final, sexually mature, and typically winged state 2: an idealized mental image of another person or the self

*im-am* \i-mām-, -mām/ *n* [Ar *imām*] (1613) 1: the prayer leader of a mosque 2 *cap*: a Muslim leader of the line of Ali held by Shiites the divinely appointed, sinless, infallible successors of Muhammad: any of various rulers that claim descent from Muhammad and exercise spiritual and temporal leadership over a Muslim region

*im-am-ate* \-āt/ *n*, often *cap* (1727) 1: the office of an imam 2: region or country ruled over by an imam

*im-a-ret* \i-mär-ət/ *n* [Turk] (ca. 1613): an inn or hospice in Turkey

*Im-a-ri* \i-mär-ē-/ *n* [Imari, Japan] (1875): a multicolored Japanese porcelain usu. characterized by elaborate floral designs — *Imari* *adj*

*im-bal-ance* \im-bal-əns/ *n* (ca. 1890): lack of balance: the state of being out of equilibrium or out of proportion (a vitamin ~ in schools) — *im-bal-anced* \-əns(ə)l/ *adj*

*im-be-cile* \im-bə-səl-, -sil/ *n* [F *imbécile*, *n*, fr. *ad.*, weak-minded, fr. L *imbecillus*, prob. fr. *in-* + *becillus* (akin to L *ba-* staff) — more at PEG] (1802) 1: a mentally deficient person: a feeble-minded person having a mental age of three to seven years requiring supervision in the performance of routine daily tasks: being for himself 2: FOOL, IDIOT — *im-be-cilic* \im-bə-sik/ *adj*